Theodore D. Schade
Air Pollution Control Officer

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

157 Short Street, Bishop, California 93514-3537 www.gbuapcd.org
Tel: 760-872-8211 Fax: 760-872-6109 info@gbuapcd.org

August 3, 2012

Title5

Larry Turner, General Manager
CR Briggs Corporation
P.O. Box 668
Trona, CA 93592

RE: Completeness Determination of Application for initial Title V Permit

Dear Mr. Turner:

The Great Basin Unified APCD (District) received your application for an initial Title V permit V-4 on February 22, 2012. After a preliminary review of the application, District staff has determined it to be complete in accordance with the U.S. EPA Code of Federal Regulations, Title 40, Part 70 – State Operating Permit Programs, and California Health & Safety Code § 42301.12 and District Rule 217.IV.C. A copy of the permit application has been forwarded to the U.S. EPA, Region IX.

If you have any questions about the completeness determination, please call Jan Sudomier at (760) 872-8211.

Sincerely,

Theodore S. Schade
Air Pollution Control Officer

Enclosure: Title V ap V-4

Cc: Gerardo Rios, US EPA Region 9
Michael Tollstrup, California Air Resources Board
George Gholson, Chairman, Timbisha Shoshone

Cc Addresses:

Gerardo Rios
EPA Region 9 Permits Office (AIR-3)
75 Hawthorne Street
San Francisco, CA 94105

Michael Tollstrup
California Air Resources Board, SSD-PAB
P.O. Box 2815
Sacramento, CA 95812-2815

George Gholson, Chairman
Timbisha Shoshone Tribe
Admin Office
1349 Rocking W Drive
Bishop, CA 93514

CR BRIGGS CORPORATION
P.O. Box 668
Trona, California 93592
Phone (760) 372-4233
Fax (760) 372-4250

February 16, 2012

Jon Becknell
Great Basin Unified Air Pollution Control District
157 Short Street
Bishop, CA 93514

Subject: CR Briggs Corporation Title V Permit Application

Dear Mr. Becknell:

Please find attached a complete application package for a Title V Operating Permit for the CR Briggs Corporation (CR Briggs). The CR Briggs facility (carbon process with a mercury retort) is subject to 40 CFR Part 63, Subpart EEEEEEE—National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category. This application is being submitted pursuant to § 63.11640(d), which requires sources subject to 40 CFR Part 63, Subpart EEEEEEE, to obtain a permit under 40 CFR Part 70. The submittal consists of the required three paper copies of the application and a check for an application filing fee of $100.

If you have any questions, please feel free to contact Joe Balas, Process Manager, at (760) 372-4233 or at jbalas@crbriggs.com.

Sincerely,

Kenneth Mann
VP, General Manager
CR Briggs Corporation

AIR SCIENCES INC.

DENVER • PORTLAND

Title V Air Permit Application

PREPARED FOR:

CR BRIGGS CORPORATION

PROJECT NO. 85-11-01
FEBRUARY 2012

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1.0 INTRODUCTION

The National Emission Standards for Hazardous Air Pollutants (NESHAP): Gold Mine Ore Processing and Production Area Source Category (40 CFR Part 63, Subpart EEEEEEE) regulations were published in the Federal Register on February 17, 2011. According to that NESHAP, all facilities subject to Subpart EEEEEEE (MACT EEEEEEE) must obtain a permit under 40 CFR Part 70 (40 CFR § 63.11640(d)). Per § 70.3(c)(2), only the emission units subject to Subpart EEEEEEE must obtain a 40 CFR Part 70 permit[1] (i.e., the remainder of the facility is not subject to Part 70).

The CR Briggs Corporation (CR Briggs) gold mining facility is subject to MACT EEEEEEE due to the operation of the carbon process with a mercury retort. This application is filed to comply with the requirements of the aforementioned MACT EEEEEEE. Application forms are provided in Appendix A. The emission sources subject to MACT EEEEEEE are part of the carbon adsorption and electrowinning circuits at CR Briggs, which are currently permitted per Permit to Operate (PTO) No. 795.

CR Briggs is not subject to Compliance Assurance Monitoring (CAM) requirements because the facility is not a major source of any air pollutants per 40 CFR § 64.2(a). Additionally, the facility is specifically exempt from CAM per 40 CFR § 64.2(b)(1)(i): "Exempt emission limitations or standards. The requirements of this part shall not apply to any of the following emission limitations or standards: Emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the [Clean Air] Act."

[1] "For any nonmajor source subject to the part 70 program under paragraph (a) or (b) of this section, the permitting authority shall include in the permit all applicable requirements applicable to emissions units that cause the source to be subject to the part 70 program" (40 CFR § 70.3(c)(2)).

2.0 FACILITY OVERVIEW

CR Briggs operates an open pit gold mine and gold ore processing facility located 8 miles south of Ballarat, on Wingate Road in Panamint Valley (Trona, CA). The facility location is shown on a map in Appendix B.

CR Briggs extracts gold from the crushed ore via cyanide leaching. The gold and silver are recovered from the ore in the adsorption, desorption, and recovery circuit. The process solution containing the dissolved gold and silver is pumped from the heap leach pile to the processing facility, where it passes though carbon columns. This is where the gold and silver adsorb to the surface of the activated carbon. Next, gold and silver are removed from the carbon in the strip vessel, creating a concentrated solution called "pregnant solution." The pregnant solution is fed to the electrowinning cells. In the electrowinning process, gold and silver are removed from the pregnant solution and precious metal sludge (concentrate) is created. The concentrate is processed in the retort furnace to remove mercury and moisture. Finally, the concentrate is melted in the furnace with flux, which enhances removal of impurities. The gold and silver doré is the final product of the refining process. The spent carbon from the strip circuit is regenerated in the carbon kiln. The process flow diagram is attached in Appendix C.

3.0 TITLE V SOURCES

Per 40 CFR § 63.11640, CR Briggs is an existing source since it was constructed before April 28, 2010. The affected source is a collection of "carbon processes with mercury retorts" at a gold mine ore processing and production facility. "Carbon processes with mercury retorts means the affected source that includes carbon kilns, preg tanks, electrowinning cells, mercury retorts, and melt furnaces at gold mine ore processing and production facilities that use activated carbon, or resins that can be used as a substitute for activated carbon, to recover (adsorb) gold from the pregnant cyanide solution" (40 CFR § 63.11651). The affected sources at CR Briggs include two electrowinning cells, one retort furnace, one doré refinery furnace, and one carbon regeneration kiln. The facility does not operate any pregnant tanks. The 7,500-gallon pregnant solution strip tank listed in the PTO No. 795 is currently used as a fresh water tank.

3.1 Electrowinning Cells

The washed solution from the carbon stripping process, called pregnant solution, is passed directly to the electrowinning circuit. The circuit consists of two identical electrowinning cells manufactured by Summit Valley Engineering, Model No. 50EC7, each rated at 50 cubic feet (375 gallons) capacity. The electrowinning cells contain cathodes in the form of stainless steel plates. The precious metals (i.e., gold and silver) migrate and attach themselves to the stainless steel cathodes. The sludge collected on cathodes is called precious metal concentrate. Emissions from the electrowinning cells are exhausted through a single stack.

3.2 Retort Furnace

The precious metal concentrate from the electrowinning process is transferred to the retort. The retort is operated under a partial vacuum and electrically heated to approximately 1,100–1,300°F to remove mercury and moisture from the gold-bearing sludge. The retort was custom-built by the Custom Equipment Corporation. The retort vessel has a capacity of 10 cubic feet. The associated electric furnace has a 146 kVA (100kW) maximum heat input capacity. The retort exhaust is controlled with a 400-gallon condenser with a 160-gallon disengagement chamber connected to a 23.5-cubic-foot (705 pounds) activated carbon filter.

3.3 Refinery Furnace

The precious metal concentrate, after processing in the retort, is refined in the doré refinery furnace. The furnace is manufactured by McEnglevan Speedy Melt, Model No. T-200. The furnace chamber is equipped with burners with a maximum heat input capacity of 1.2 MMBtu per hour and can attain combustion temperatures up to 2400°F. CR Briggs uses propane gas to fuel the furnace. The precious metal concentrate and flux are heated in the furnace and the molten bullion is poured into a mold. Doré bars are the final product of the refining process.

The furnace is hooded and the hood exhaust emissions are routed to the baghouse. The baghouse is model Torit Downflo II, Model No. DFT2-12. It is a cartridge-type pulse-jet baghouse with a 2,400–

square-foot total filter area and is rated at 3,000 actual cubic feet per minute. The baghouse is monitored by a differential pressure gage.

3.4 Carbon Kiln

The spent activated carbon from the stripping process is reactivated in the electric carbon kiln. The vertical carbon regeneration kiln is manufactured by Summit Valley Engineering, Model No. 2298561. The kiln's throughput is limited by PTO No. 795 to 2,000 pounds of carbon charged per day. In the reactivation process, the spent carbon is heated to a high temperature up to 1200°F. The adsorbed pollutants are either volatilized from the activated carbon or pyrolized to carbon char. The reactivated carbon is recycled for reuse in the carbon columns.

4.0 EMISSIONS

Emissions of regulated pollutants from the affected sources were estimated using stack test data, operational data for the calendar year 2011, and AP-42 emissions factors.

CR Briggs tested the retort furnace for mercury emissions on July 21, 2010. Testing was performed by Air Quality Engineering, Inc., located in Irvine, California. A final stack test report entitled "Mercury Emissions Test Report For The Mercury Retort System, CR Briggs Corporation" (project number 10-520) was issued on September 13, 2010. According to the report, the testing was performed using EPA Methods 1, 2, 3A, and 4 and CARB Method 101A.

There are no stack test data available for other sources at CR Briggs. Therefore, mercury emission factors from a similar-sized gold mine with test data from similar mercury units were used to estimate the actual mercury emissions.

Detailed emissions calculations for regulated pollutants from the sources subject to MACT EEEEEEE are in Appendix D.

Appendix A: Application Forms

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 04/30/2012

Federal Operating Permit Program (40 CFR Part 71)

GENERAL INFORMATION AND SUMMARY (GIS)

A. Mailing Address and Contact Information

Facility name ____*CR Briggs Corporation*_____

Mailing address: Street or P.O. Box ___*P.O. Box 668*_____

City _____*Trona*_____ State __*CA*___ ZIP __*93592*_____-_____

Contact person: __*Joe Balas*_____ Title ___*Process Manager*_____

Telephone (_*760*__) __*372*___ - ___*4233*____ Ext. _____

Facsimile (_*760*__) ___*372*__ - __*4250*_____

B. Facility Location

Temporary source? ___Yes _*X*_No Plant site location __*8 miles south of Ballarat*_____

_____*on Wingate Road, Panamint Valley*_____

City ____*Trona*_____ State_*CA*__ County___*Inyo*_____ EPA Region_*IX*_

Is the facility located within:

Indian lands? ___YES _*X*_ NO OCS waters? ___YES _*X*_ NO

Non-attainment area? ___ YES _*X*__NO If yes, for what air pollutants? _____

Within 50 miles of affected State? __ YES _*X*_ NO If yes, What State(s)? _____

C. Owner

Name __*CR Briggs Corporation*_____ Street/P.O. Box ___ *P.O. Box 668*_____

City ____*Trona*_____ State_*CA*___ ZIP_*93592*____ - _____

Telephone (_*760*__) __*372*___ - ___*4233*____ Ext_____

D. Operator

Name __*CR Briggs Corporation*_____ Street/P.O. Box ___ *P.O. Box 668*_____

City ____*Trona*_____ State_*CA*___ ZIP_*93592*____ - _____

Telephone (_*760*__) __*372*___ - ___*4233*____ Ext_____

E. Application Type

Mark only one permit application type and answer the supplementary question appropriate for the type marked.

_X_Initial Permit ___ Renewal ___ Significant Mod ___ Minor Permit Mod(MPM)

___ Group Processing, MPM ___ Administrative Amendment

For initial permits, when did operations commence? __*10*_ /__*24*_ /_*1996*_

For permit renewal, what is the expiration date of current permit? _____/____/_____

F. Applicable Requirement Summary

Mark all types of applicable requirements that apply.

___ SIP ___ FIP/TIP ___ PSD ___Non-attainment NSR

___ Minor source NSR ___ Section 111 ___ Phase I acid rain ___Phase II acid rain

___ Stratospheric ozone ___ OCS regulations _*X*_ NESHAP ___ Sec. 112(d) MACT

___ Sec. 112(g) MACT ___ Early reduction of HAP ___ Sec 112(j) MACT ___ RMP [Sec.112(r)]

___ Tank Vessel requirements, sec. 183(f)) ___ Section 129 Standards/Requirement

___ Consumer / comm.. products, ' 183(e) ___ NAAQS, increments or visibility (temp. sources)

Has a risk management plan been registered? ___YES _*X*_NO Regulatory agency _____

Phase II acid rain application submitted? ___YES _*X*_NO If yes, Permitting authority _____

G. Source-Wide PTE Restrictions and Generic Applicable Requirements

Cite and describe any emissions-limiting requirements and/or facility-wide "generic" applicable requirements.

NA

H. Process Description

List processes, products, and SIC codes for the facility.

Process	Products	SIC
Mining and beneficiating gold and silver ore	*Precious metal doré*	*1041*

I. Emission Unit Identification

Assign an emissions unit ID and describe each emissions unit at the facility. Control equipment and/or alternative operating scenarios associated with emissions units should by listed on a separate line. Applicants may exclude from this list any insignificant emissions units or activities.

Emissions Unit ID	Description of Unit
EC01 & EC02	*Two (2) electrowinning cell banks, each rated at 50 ft^3 (375 gallons) capacity. Uncontrolled.*
RF1	*One (1) retort furnace, 146 kVa. Controlled (see below).*
RF2	*One (1) water-cooled heat exchanger condenser w/disengagement chamber connected to a 705 lb activated carbon filter.*
FC01	*One (1) doré refinery furnace (propane-fired), 1.2 MMBtu/hr. Controlled (see below).*
BH01	*Torit Downflo II, model No. DFT2-12, cartridge type pulse-jet baghouse rated at 2,400 ft^2 filter area, 3,000 cfm.*
CRK1	*One (1) one-ton capacity vertical carbon regeneration kiln, 40 kWa. Uncontrolled.*
Please note that only sources subject to 40 CFR Part 63, Subpart EEEEEEE are listed in this application per 40 CFR Part 70.3(c)(2).	

J. Facility Emissions Summary

Enter potential to emit (PTE) for the facility as a whole for each air pollutant listed below. Enter the name of the single HAP emitted in the greatest amount and its PTE. For all pollutants stipulations to major source status may be indicated by entering "major" in the space for PTE. Indicate the total actual emissions for fee purposes for the facility in the space provided. Applications for permit modifications need not include actual emissions information.

NOx _*<100*_____ tons/yr VOC __*<100*_____ tons/yr SO2 __*<100*_____ tons/yr

PM-10 __*<100*_____ tons/yr CO __*<100*_____ tons/yr Lead __*<100*_____ tons/yr

Total HAP __*<25*_____ tons/yr

Single HAP emitted in the greatest amount ____*ANY*_____ PTE __*<10*__ tons/yr

Total of regulated pollutants (for fee calculation), Sec. F, line 5 of form FEE _*NA*__ tons/yr

See page D-6 of Appendix D for emissions summary.

K. Existing Federally-Enforceable Permits

Permit number(s) ___*795*_____ Permit type _*Operating*___ Permitting authority _*GBUAPCD*_

Permit number(s) _____ Permit type _____ Permitting authority _____

L. Emission Unit(s) Covered by General Permits

Emission unit(s) subject to general permit _____*NA*_____

Check one: ___ Application made ___ Coverage granted

General permit identifier _____ Expiration Date ____/____/____

M. Cross-referenced Information

Does this application cross-reference information? ___ YES _*X*_ NO (If yes, see instructions)

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 04/30/2012

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID _ *EC01 & EC02*___ Description __*Two (2) electrowinning cell banks* _____

SIC Code (4-digit) _*1041*_____ SCC Code_____

B. Emissions Unit Description

Primary use or equipment type __*Precious metal solution processing*_____

Manufacturer _*Summit Valley Engineering*_____ Model No. ___*50EC7*_____

Serial No. _____*365EC001, 365EC002*_____ Installation date _*06*__/_*01*__/_*1996*_

Raw materials _____*Pregnant solution*_____

Finished products ___*Precious metal concentrate*_____

Temporary source: _X_No ___Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	*1 batch/10 hours*	*108,447.4 troy oz./year of concentrate*
Maximum rate	*375 gallons/batch, each*	*0.5 MM troy oz./year of concentrate*

D. Associated Air Pollution Control Equipment

Emissions unit ID __*NA*_____ Device Type____*No add-on controls*_____

Manufacturer _____ Model No_____

Serial No. _____ Installation date _____/_____/_____

Control efficiency (%) _____ Capture efficiency (%) _____

Air pollutant(s) controlled _____ Efficiency estimation method _____

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) ___*TBD*_____ Inside stack diameter (ft) ___ *TBD* _____

Stack temp (F) ___ *TBD* _____ Design stack flow rate (ACFM) __ *TBD* _____

Actual stack flow rate (ACFM) __ *TBD* _____ Velocity (ft/sec) ___ *TBD* _____

TBD: This source has never been tested. These stack parameters will be determined during the initial compliance stack test required pursuant to 40 CFR Part 63, Subpart EEEEEEE.

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 04/30/2012

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID ___*RF1*_____ Description __*One (1) retort furnace*_____

SIC Code (4-digit) __*1041*____ SCC Code_____

B. Emissions Unit Description

Primary use or equipment type __*Precious metal concentrate processing*_____

Manufacturer _*Custom Equipment Corporation*_____ Model No. __unknown_____

Serial No. ___unknown_____ Installation date _*04*__/_*01*__/_*1999*_

Raw materials ___*Precious metal concentrate*_____

Finished products __ *Precious metal concentrate*_____

Temporary source: ___No _*X*_Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	*1 batch / 12-24 hours*	*108,447.4 troy oz./year of concentrate*
Maximum rate	*10 ft^3/batch*	*0.5 MM troy oz./year of concentrate*

D. Associated Air Pollution Control Equipment

Emissions unit ID __*RF2*_____ Device Type___*One (1) water-cooled heat exchanger condenser w/disengagement chamber connected to a 705 lb activated carbon filter* _____

Manufacturer _*Custom Equipment Corporation*_____ Model No___*unknown*_____

Serial No. ____*unknown*_____ Installation date _*04*__/_*01*__/__*1999*___

Control efficiency (%) __ *unknown*____ Capture efficiency (%) __*100*_____

Air pollutant(s) controlled _*Mercury*_____ Efficiency estimation method __*unknown*_____

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) __*25*_____ Inside stack diameter (ft) __*0.5*_____

Stack temp (F) _*104*_____ Design stack flow rate (ACFM) _*unknown*_____

Actual stack flow rate (ACFM) __*54*_____ Velocity (ft/sec) ___*5.61*_____

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 04/30/2012

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID __*FC01*__Description _*One (1) doré refinery furnace (propane-fired), 1.2 MMBtu/hr*__

SIC Code (4-digit) __*1041*____ SCC Code_____

B. Emissions Unit Description

Primary use or equipment type __*Precious metal concentrate processing*_____

Manufacturer _*McEnglevan Speedy Melt*_____ Model No. ___*T-200*_____

Serial No. __*257-S*_____ Installation date _*06*__/_*01*__/_*1996*__

Raw materials ____*Precious metal concentrate*_____

Finished products ___*Doré bars*_____

Temporary source: _X_No ___Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	*1 batch/2-3 hours*	*108,447.4 troy oz./year of concentrate*
Maximum rate	*875 lb/batch (as brass)*	*0.5 MM troy oz./year of concentrate*

D. Associated Air Pollution Control Equipment

Emissions unit ID __*BH01*_____ Device Type___*Baghouse*_____

Manufacturer __*Torit*_____ Model No__*Downflo II, DFT2-12*_____

Serial No. ___*IG393427-001*_____ Installation date __*06*_/_*01*__/__*1996*___

Control efficiency (%) _ *unknown*_ Capture efficiency (%) _ *unknown* (assume all fume captured)_

Air pollutant(s) controlled _*PM, PM_{10}*_____ Efficiency estimation method _ *unknown* ____

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) ___*TBD*_____ Inside stack diameter (ft) ___ *TBD* _____

Stack temp (F) ___ *TBD* _____ Design stack flow rate (ACFM) __ *TBD* _____

Actual stack flow rate (ACFM) __ *TBD* _____ Velocity (ft/sec) ___ *TBD* _____

TBD: This source has never been tested. These stack parameters will be determined during the initial compliance stack test required pursuant to 40 CFR Part 63, Subpart EEEEEEE.

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 04/30/2012

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID __*CRK1*___ Description _*One (1) vertical carbon regeneration kiln*__

SIC Code (4-digit) _*1041*_____ SCC Code_____

B. Emissions Unit Description

Primary use or equipment type __*Spent carbon regeneration*_____

Manufacturer _*Summit Valley Engineering*_____ Model No. __*2298561*_____

Serial No. ___*unknown*_____ Installation date __*07*_/__*16*_/_*2001*_

Raw materials ___*Spent carbon*_____

Finished products __*Activated carbon*_____

Temporary source: _X_No ___Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	*2,000 lb/day*	*365 tons/year*
Maximum rate	*2,000 lb/day*	*365 tons/year*

D. Associated Air Pollution Control Equipment

Emissions unit ID ___*NA*_____ Device Type__*No add-on control*_____

Manufacturer _____ Model No_____

Serial No. _____ Installation date _____/_____/_____

Control efficiency (%) _____ Capture efficiency (%) _____

Air pollutant(s) controlled _____ Efficiency estimation method _____

E. Ambient Impact Assessment

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) ___*TBD*_____ Inside stack diameter (ft) ___*TBD*_____

Stack temp (F) ___*TBD*_____ Design stack flow rate (ACFM) __*TBD*_____

Actual stack flow rate (ACFM) __*TBD*_____ Velocity (ft/sec) ___*TBD*_____

TBD: This source has never been tested. These stack parameters will be determined during the initial compliance stack test required pursuant to 40 CFR Part 63, Subpart EEEEEEE

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID *__EC01 and EC02___*

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
Mercury	*0.46 lb/yr*	*7.4E-05*	*37.7 lb/yr**	

**Total allowable emissions for the carbon processes with mercury retorts affected source group are 2.2 lb/ton of concentrate (40 CFR §63.11645(b)). The compliance date for this standard is February 17, 2014 (40 CFR §63.11641(a)). The total potential mercury emissions from all sources subject to MACT EEEEEEE are based on a maximum concentrate processing rate of 500,000 troy ounces.*

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID *__RF1___*

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
Mercury	*0.003 lb/yr*	*4.8E-06*	*37.7 lb/yr**	

**Total allowable emissions for the carbon processes with mercury retorts affected source group are 2.2 lb/ton of concentrate (40 CFR §63.11645(b)). The compliance date for this standard is February 17, 2014 (40 CFR §63.11641(a)). The total potential mercury emissions from all sources subject to MACT EEEEEEE are based on a maximum concentrate processing rate of 500,000 troy ounces.*

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID *FC01*

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
PM	*0.34*	*2.53*	*11.08*	
PM_{10}	*0.34*	*2.53*	*11.08*	
NO_X	*0.02*	*0.17*	*0.75*	
CO	*0.01*	*0.10*	*0.43*	
VOC	*0.001*	*0.01*	*0.05*	
CO_2e	*22.08*	*163*	*715.05*	
Mercury	*0.07 lb/yr*	*2.7E-04*	*37.7 lb/yr**	

**Total allowable emissions for the carbon processes with mercury retorts affected source group are 2.2 lb/ton of concentrate (40 CFR §63.11645(b)). The compliance date for this standard is February 17, 2014 (40 CFR §63.11641(a)). The total potential mercury emissions from all sources subject to MACT EEEEEEE are based on a maximum concentrate processing rate of 500,000 troy ounces.*

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID *CRK1*

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
PM	*0.06*	*0.24*	*1.05*	
PM_{10}	*0.06*	*0.24*	*1.05*	
CO	*0.002*	*4.1E-04*	*0.002*	
Mercury	*8.29 lb/yr*	*9.4E-03*	*37.7 lb/yr**	

**Total allowable emissions for the carbon processes with mercury retorts affected source group are 2.2 lb/ton of concentrate (40 CFR §63.11645(b)). The compliance date for this standard is February 17, 2014 (40 CFR §63.11641(a)). The total potential mercury emissions from all sources subject to MACT EEEEEEE are based on a maximum concentrate processing rate of 500,000 troy ounces.*

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 04/30/2012

Federal Operating Permit Program (40 CFR Part 71)

POTENTIAL TO EMIT (PTE)

For each unit with emissions that count towards applicability, list the emissions unit ID and the PTE for the air pollutants listed below and sum them up to show totals for the facility. You may find it helpful to complete form **EMISS** before completing this form. Show other pollutants not listed that are present in major amounts at the facility on attachment in a similar fashion. You may round values to the nearest tenth of a ton. Also report facility totals in section J of form **GIS**.

Emissions Unit ID	Regulated Air Pollutants and Pollutants for which the Source is Major* (tons/yr)						
	NOx	VOC	SO2	PM10	CO	Lead	HAP (Mercury)
CRK1	-	-	-	*1.05*	*0.002*	-	*37.71 lb/yr***
EC01 and EC02	-	-	-	-	-	-	
RF1	-	-	-	-	-	-	
FC01	*0.75*	*0.05*	-	*11.08*	*0.43*	-	

**Please note that only sources subject to 40 CFR Part 63, Subpart EEEEEEE are listed in this application per 40 CFR Part 70.3(c)(2). The facility is not a major source of any regulated pollutants.*

***Total allowable emissions for the carbon processes with mercury retorts affected source group are 2.2 lb/ton of concentrate (40 CFR §63.11645(b)). The compliance date for this standard is February 17, 2014 (40 CFR §63.11641(a)). The total potential mercury emissions from all sources subject to MACT EEEEEEE are based on a maximum concentrate processing rate of 500,000 troy ounces.*

Federal Operating Permit Program (40 CFR Part 71)

INITIAL COMPLIANCE PLAN AND COMPLIANCE CERTIFICATION (I-COMP)

SECTION A - COMPLIANCE STATUS AND COMPLIANCE PLAN

Complete this section for each unique combination of applicable requirements and emissions units at the facility. List all compliance methods (monitoring, recordkeeping and reporting) you used to determine compliance with the applicable requirement described above. Indicate your compliance status at this time for this requirement and compliance methods and check "YES" or "NO" to the follow-up question.

Ernission Unit ID(s): *EC01 & EC02, RF1, FC01, CRK1, and associated control devices*

Applicable Requirement (Describe and Cite)

40 CFR Part 63, Subpart EEEEEEE – "National Emission Standards for Hazardous Air Pollutants (NESHAP): Gold Mine Ore Processing and Production Area Source Category"

Compliance Methods for the Above (Description and Citation):

As required pursuant to 40 CFR Part 63, Subpart EEEEEEE

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? _X__Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

_X_ Future-Effective Requirement: Do you expect to meet this on a timely basis? __X_Yes ____No

Emission Unit ID(s): *EC01 & EC02, RF1, FC01, CRK1*

Applicable Requirement (Description and Citation):

Visible emissions are limited to 20% opacity (District Rule 400)

Compliance Methods for the Above (Description and Citation):

In the absence of credible evidence to the contrary, compliance with the opacity limit shall be presumed based on the type of materials used and the method of operation.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X_Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes ____No

I-COMP

Emission Unit ID(s): *FC01, CRK1*

Applicable Requirement (Describe and Cite)

PM emissions are limited to 0.3 grain per standard dry cubic foot of exhaust gas (District Rule 404-A).

Compliance Methods for the Above (Description and Citation):

The doré furnace is vented through a baghouse (BH01). The facility is required to keep in stock 20% of replacement cartridge filters. The baghouse is equipped with a magnetic differential pressure gage to indicate cleaning cycle as recommended by the manufacturer (PTO No. 795, Condition 4).*
The carbon kiln is assumed to be in compliance with this requirement.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X_Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ___Yes ____No

Emission Unit ID(s): *FC01*

Applicable Requirement (Description and Citation):

PM emissions from the doré furnace are limited to 2.53 lb/hr based on the 875 lb/hr process rate (District Rule 404-A).

Compliance Methods for the Above (Description and Citation):

The doré furnace is vented through a baghouse (BH01). The facility is required to keep in stock 20% of replacement cartridge filters. The baghouse is equipped with a magnetic differential pressure gage to indicate cleaning cycle as recommended by the manufacturer (PTO No. 795, Condition 4). Compliance is assumed.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X_Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes ____No

**The PM emissions from the doré furnace are currently limited to 0.05 g/dscm of exhaust gas (PTO No. 795, Condition 4). The dore furnace is not subject to 40 CFR Part 60, Subpart LL; therefore, it should not be subject to the aforementioned PM emission limit.*

Emission Unit ID(s): *CRK1*

Applicable Requirement (Describe and Cite)

PM emissions from the carbon kiln are limited to 0.24 lb/hr based on the 83.3 lb/hr (2,000 lb capacity/24 hours) process rate (District Rule 404-A).

Compliance Methods for the Above (Description and Citation):

The carbon kiln is assumed to be in compliance with this requirement.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X_Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ___Yes ____No

Emission Unit ID(s): *FC01*

Applicable Requirement (Description and Citation):

Sulfur compounds calculated as SO_2 emissions from the doré furnace are limited to 0.2% by volume of exhaust gas (District Rule 416).

Compliance Methods for the Above (Description and Citation):

Per AP-42, Appendix A (Rev 1/95), the sulfur content in LPG is negligible; therefore, SO_2 emissions from propane combustion are negligible.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X_Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes ____No

Emission Unit ID(s): *FC01*

Applicable Requirement (Describe and Cite)

Nitrogen oxides emissions from the doré furnace, calculated as NO_2, are limited to 140 lb/hr (District Rule 416).

Compliance Methods for the Above (Description and Citation):

The nitrogen dioxide emissions from the doré furnace are 0.17 lb/hr based on engineering calculations using the emission factor from AP-42, Chapter 1.5, Table 1.5-1 (Rev 07/08) for Commercial Boilers.

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? __X_Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ___Yes ____No

B. SCHEDULE OF COMPLIANCE

Complete this section if you answered "NO" to any of the questions in section A. Also complete this section if required to submit a schedule of compliance by an applicable requirement. Please attach copies of any judicial consent decrees or administrative orders for this requirement.

Unit(s)____*NA*_____ Requirement_____

Reason for Noncompliance. Briefly explain reason for noncompliance at time of permit issuance or that future-effective requirement will not be met on a timely basis:

Narrative Description of how Source Compliance Will be Achieved. Briefly explain your plan for achieving compliance:

Schedule of Compliance. Provide a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance, including a date for final compliance.

Remedial Measure or Action	Date to be Achieved
NA	*NA*

C. SCHEDULE FOR SUBMISSION OF PROGRESS REPORTS

Only complete this section if you are required to submit one or more schedules of compliance in section B or if an applicable requirement requires submittal of a progress report. If a schedule of compliance is required, your progress report should start within 6 months of application submittal and subsequently, no less than every six months. One progress report may include information on multiple schedules of compliance.

Contents of Progress Report (describe): *NA*

First Report____/____/___ Frequency of Submittal_____

Contents of Progress Report (describe):

First Report____/____/___ Frequency of Submittal_____

D. SCHEDULE FOR SUBMISSION OF COMPLIANCE CERTIFICATIONS

This section must be completed once by every source. Indicate when you would prefer to submit compliance certifications during the term of your permit (at least once per year).

Frequency of submittal__*Annually, according to MACT EEEEEEE compliance reporting schedule*_ Beginning___*Within 12 months of permit issuance*

E. COMPLIANCE WITH ENHANCED MONITORING & COMPLIANCE CERTIFICATION REQUIREMENTS

This section must be completed once by every source. To certify compliance with these, you must be able to certify compliance for every applicable requirement related to monitoring and compliance certification at every unit.

Enhanced Monitoring Requirements: _*NA*_ In Compliance ____ Not In Compliance

Compliance Certification Requirements: _*X*__ In Compliance ____ Not In Compliance

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 04/30/2012

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) ___*Mann*_____ (First) ___*Kenneth*_____ (MI) ____

Title ___*VP/General Manager*_____

Street or P.O. Box ___*P.O. Box 668*_____

City ____*Trona*_____ State _*CA*__ ZIP __*93592*____ - _____

Telephone (_*760*_) _*372*_ - __*4233*___ Ext. _____ Facsimile (____) _____ - _____

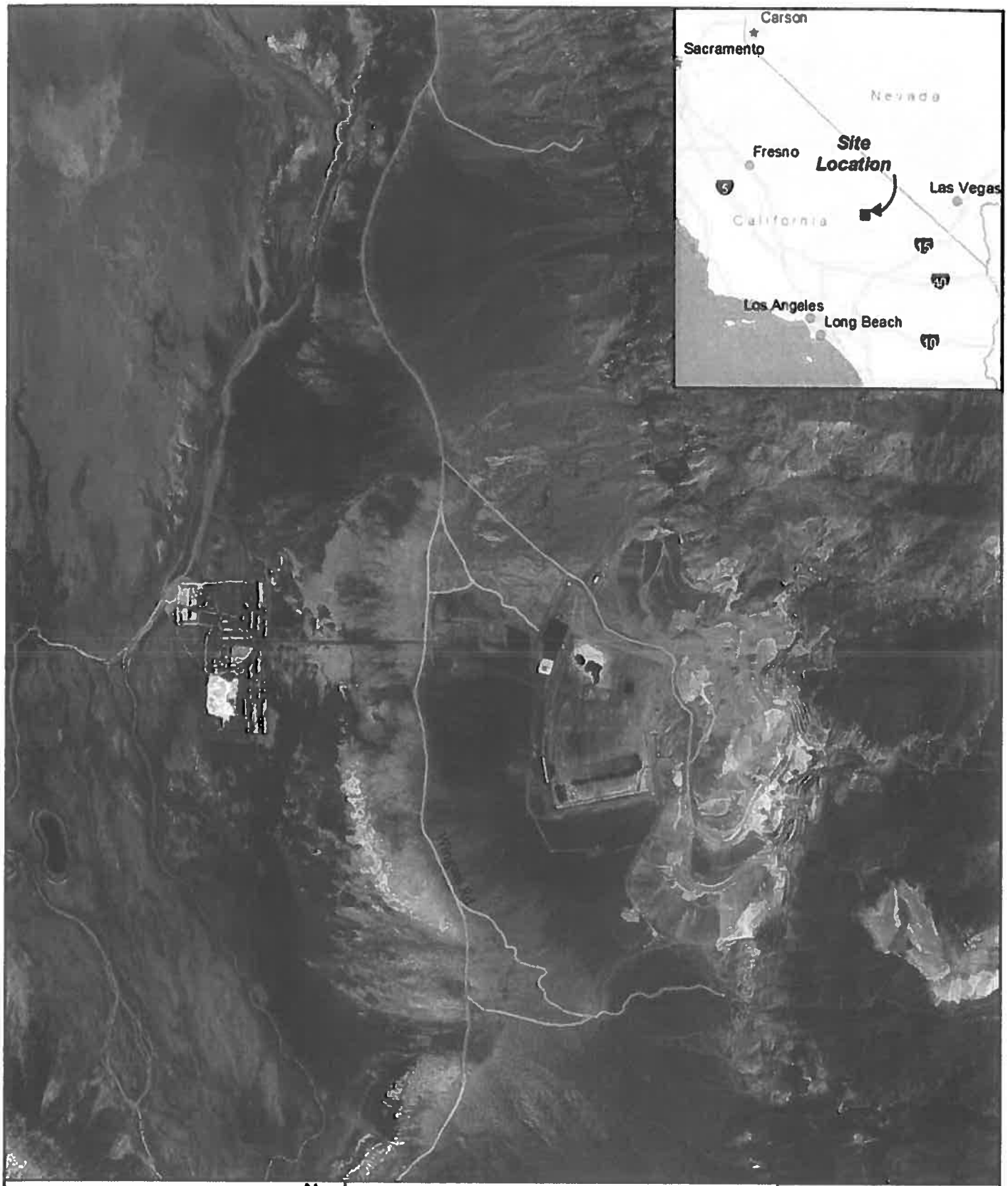
B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) _____

Name (typed) __*Kenneth Mann*_____ Date: _____ /_____ /_____

Appendix B: Location Map



CR Briggs Corporation
Gold Ore Mine and Processing Facility

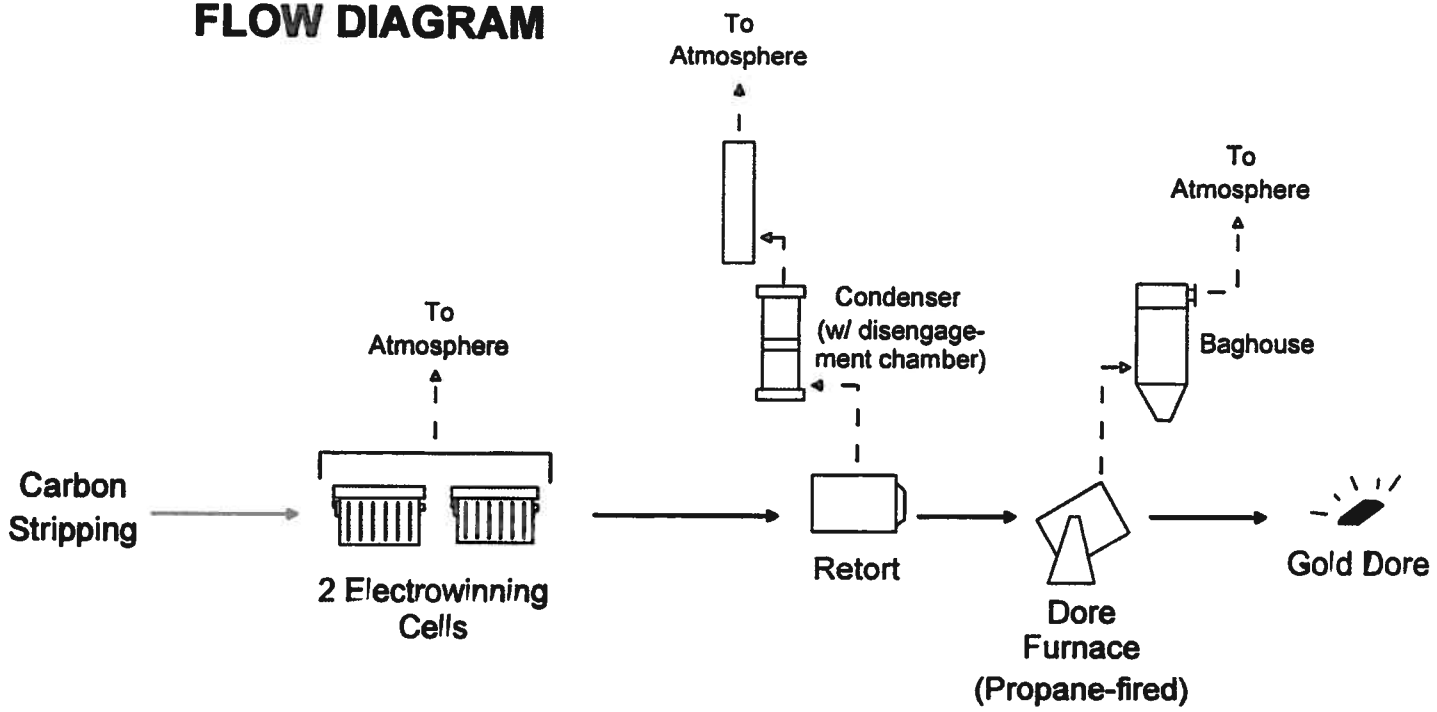
Version: 02/08/2012

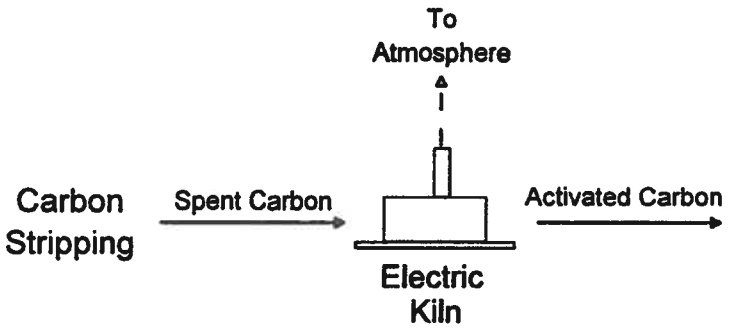
Project No: 85-11

AIR SCIENCES INC.
DENVER • PORTLAND

Appendix C: Process Flow Diagram

REFINERY PROCESS FLOW DIAGRAM





LEGEND

- Pregnant Solution
- Precious Metal Concentrate
- Carbon

REFINERY PROCESS FLOW DIAGRAM

CR BRIGGS MINE

AIR SCIENCES INC.
GOLDEN, COLORADO

Appendix D: Emissions Calculations

Air Sciences Inc.	PROJECT TITLE: CR Briggs	BY: A. Loyd		
AIR SCIENCES INC.	PROJECT NO: 85-11-1	PAGE: 1	OF: 1	SHEET: Activity
ENGINEERING CALCULATIONS	SUBJECT: MACT EEEEEEE Sources	DATE: February 15, 2012		

POTENTIAL PROCESS RATES AND HOURS OF OPERATION

Unit Code	Unit Description	Hours of Operation Max	Process Rates Hourly	Annual	Units	Reference
CRF1	Carbon Kiln	8,760	0.042	365	tons	*PTO No. 795, Condition 20*
EC01 and EC02	Electrowinning Cells	8,760	750	657000	gallons	*J. Balas, CR Briggs, 2/7/2012 and mfg. data*
RF1	Retort Furnace	8,760	875	34,286	lb	
FC01	Dore Refinery Furnace	8,760	875	34,286	lb	*J. Balas, CR Briggs, 2/7/2012 and mfg. data.*

ACTUAL PROCESS RATES AND HOURS OF OPERATION FOR CY 2011

Unit Code	Unit Description	Hours of Operation Actual (2011)	Process Rates Annual	Units	Reference
CRF1	Carbon Kiln	8,760	365	tons	*J. Balas, CR Briggs, email 2/9/2012*
EC01 and EC02	Electrowinning Cells	6,260	108447.4	troy ounces	*J. Balas, CR Briggs, email 1/26 and 2/9/2012*
RF1	Retort Furnace	624	108447.4	troy ounces	*J. Balas, CR Briggs, email 1/26 and 2/9/2012*
FC01	Dore Refinery Furnace	270.5	108447.4	troy ounces	*J. Balas, CR Briggs, email 1/26 and 2/9/2012*
			7,436.39	lb	

FUEL BURNING RATES

Unit Code	Unit Description	Fuel	Maximum MMBtu/hr	Hours of Operation Annual (2011)	Fuel Usage (gal) Hourly	Actual Annual	Potential Annual
FC01	Dore Refinery Furnace	Propane	1.2	270.5	13.115	3,548	114685

Note: propane has a heating value of 91.5 MMBtu/10^3 gal (AP-42, Chapter 1.5, Table 1.5-1, Footnote a (Rev 07/08))

Conversions

1 lb = 14.5833 troy ounces

AIR SCIENCES INC	Air Sciences Inc.	PROJECT TITLE: CR Briggs	BY: A Loyd		
		PROJECT NO: 85-11-1	PAGE: 1	OF: 1	SHEET: Combustion
	ENGINEERING CALCULATIONS	SUBJECT: MACT EEEEEE Sources	DATE: February 15, 2012		

Boiler size = 1.2 MMBtu/hour
Hours of operation = 270.5 hr/year
Propane gas thermal equivalent = 91.5 MMBtu/10^3 gal (AP-42, Chapter 1.5, Table 1.5-1, Footnote a (Rev 07/08))

Actual and Potential Uncontrolled Emissions of Criteria Pollutants from Combustion
Emission factors obtained from AP-42, Chapter 1.5, Table 1.5-1 (Rev 07/08) for Commercial Boilers

Pollutant	Emission Factor lb/10^3 gal	Actual Emissions		Potential Emissions	
		lb/hr	ton/year	lb/hr	ton/year
NO_x	13	0.17	0.02	0.17	0.75
CO	7.5	0.10	0.01	0.10	0.43
PM (Total)	0.7	0.01	0.001	0.01	0.04
PM (Condensable)	0.5	0.007	0.001	0.01	0.03
PM (Filterable)	0.2	0.003	0.0004	0.00	0.01
SO_2	0*	0	0	0.00	0
TOC	1.0	0.01	0.002	0.01	0.06
VOC	0.8	0.01	0.001	0.010	0.05

* Per AP-42, Appendix A (Rev 1/95), the sulfur content in LPG is negligible.

Actual and Potential Uncontrolled Emissions of Greenhouse Gases from Combustion
Emission factors obtained from 40 CFR 98 Subpart C, Table C-1 and C-2 for propane.
Global warming potential information obtained from 40 CFR 98, Subpart A, Table A-1.

Pollutant	Emission Factor kg/MMBtu	Global Warming Potential (100 yr.)	Actual Emissions		Actual CO_2e	Potential Emissions		Potential CO_2 Equivalence	
			tonne/year	ton/year	ton/year	tonne/year	ton/year	tonne/ year	ton/year
CO_2	61.46	1	19.95	21.99	21.99	646.07	712.17	646.1	712.2
CH_4	0.003	21	0.001	0.001	0.02	0.03	0.03	0.7	0.7
N_2O	0.0006	310	0.0002	0.0002	0.07	0.006	0.007	2.0	2.2
Total GHGs			19.95	21.99	22.08	646.11	712.21	648.69	715.05

Conversion factors:
metric tonne = 1.10231 short ton (40 CFR 98, Subpart A, Table A-2, Units of Measure Conversions)

CO_2 equivalence is calculated as follows:
CO_2e (tonne/year) = (CO_2 tonne/year x 1)+(CH_4 tonne/year x 21)+(N_2O tonne/year x 310)

Air Sciences Inc.	PROJECT TITLE: CR Briggs	BY: A. Loyd		
AIR SCIENCES INC.	PROJECT NO: 85-11-1	PAGE: 1	OF: 1	SHEET: PM
ENGINEERING CALCULATIONS	SUBJECT: MACT EEEEEEE Sources	DATE: February 15, 2012		

Carbon Kiln

			Reference
Actual/Potential Operation	8,760 hr/yr		
PM Emissions	0.3 gr/dscf		*SIP, District Rule 404-A*
Exhaust Flow Rate	10 cfm		*PTO No. 975, Condition 18*
Exhaust Temperature	1,200 °F =	1,660 °K	*PTO No. 975, Condition 19*

Standard Exhaust Flow Rate: $\frac{10 \text{ cfm}}{\frac{273 \text{ °K}}{1660 \text{ °K}}} = 1.64 \text{ scfm}$ *(Moisture content and pressure ratios are omitted for this simplified calculation)*

Allowable PM emission rate: $\frac{0.3 \text{ grain}}{\text{dscf}} \times \frac{\text{lb}}{2100 \text{ grain}} \times \frac{1.64 \text{ scf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = \frac{0.0141 \text{ lb}}{\text{hr}}$

Actual/Potential PM Emissions:

$$\frac{0.01 \text{ lb PM}}{\text{hr}} \times \frac{8{,}760 \text{ hr}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lb}} = \frac{0.06 \text{ ton PM}}{\text{yr}}$$

The carbon kiln is also subject to a 0.24 lb/hr PM emissions limit based on the process rate of 83.3 lb/hr per District Rule 404-A.

Actual PM Emissions:

$$\frac{0.24 \text{ lb PM}}{\text{hr}} \times \frac{8{,}760 \text{ hr}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lb}} = \frac{1.05 \text{ ton PM}}{\text{yr}}$$

Potential PM Emissions:

$$\frac{0.24 \text{ lb PM}}{\text{hr}} \times \frac{8{,}760 \text{ hr}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lb}} = \frac{1.05 \text{ ton PM}}{\text{yr}}$$

Dore Furnace

		Reference
Actual Operation	271 hr/yr	*J. Balas, CR Briggs, email 1/26*
Potential Operation	8,760 hr/yr	
PM Emissions	2.53 lb/hr	*SIP, District Rule 404-A*

Actual PM Emissions:

$$\frac{2.53 \text{ lb PM}}{\text{hr}} \times \frac{271 \text{ hr}}{\text{yr}} \times \frac{\text{ton}}{2000 \text{ lb}} = \frac{0.34 \text{ ton PM}}{\text{yr}}$$

Potential PM Emissions:

$$\frac{2.53 \text{ lb PM}}{\text{hr}} \times \frac{8{,}760 \text{ hr}}{\text{yr}} \times \frac{\text{ton}}{2{,}000 \text{ lb}} = \frac{11.08 \text{ ton PM}}{\text{yr}}$$

Conversions

1 lb = 2,100 grains

Air Sciences Inc.	PROJECT TITLE: CR Briggs	BY: A. Lloyd		
AIR SCIENCES INC	PROJECT NO: 85-11-1	PAGE: 1	OF: 1	SHEET: CO
ENGINEERING CALCULATIONS	SUBJECT: MACT EEEEEEE Sources	DATE: February 15, 2012		

Carbon Kiln

The concentration of all emissions exhausted to the atmosphere from the carbon kiln are limited to 65 ppmvd (PTO No. 975, Condition 21). Conservatively, it is assumed that the carbon kiln emits 65 ppmvd of CO for this estimate.

Actual CO Emissions

65 dscf CO	1.64 dscf	lb-mole	28 lb	60 min	8760 hr	ton	=	2.0E-03 ton CO
1.00E+06 dscf	min	385.322 scf (20C, 68F)	lb-mole	hr	yr	2000 lb		yr

Potential CO Emissions

65 dscf CO	1.64 dscf	lb-mole	28 lb	60 min	8760 hr	ton	=	2.0E-03 ton CO
1.00E+06 dscf	min	385.322 scf (20C, 68F)	lb-mole	hr	yr	2000 lb		yr

AIR SCIENCES INC.	Air Sciences Inc.	PROJECT TITLE: CR Briggs	BY: A. Loyd		
		PROJECT NO: 85-11-1	PAGE: 1	OF: 1	SHEET: Hg
	ENGINEERING CALCULATIONS	SUBJECT: MACT EEEEEEE Sources	DATE: February 15, 2012		

Carbon Kiln

		Reference
Actual Operation	8,760 hr/yr	*J. Balas, CR Briggs, email 2/9/2012*
Hg Emissions	2.27E-02 lb/ton	*Most recent stack test for Florida Canyon's carbon kiln from NDEP's MEMS database (5.15E-06 lb Hg/hr at process rate of 454 lb carbon/hr)*

Because there is no stack test data for CR Briggs, actual mercury emissions are estimated using test data from Florida Canyon, which is a similar-sized gold mine with test data from mercury units without carbon controls.

Actual Mercury Emissions:

$$\frac{2.27E\text{-}02\ \text{lb Hg}}{\text{ton}} \times \frac{365\ \text{ton}}{\text{yr}} \times \frac{\text{ton}}{2000\ \text{lb}} = \frac{4.1E\text{-}03\ \text{ton Hg}}{\text{yr}} \quad \frac{8.29\ \text{lb Hg}}{\text{yr}}$$

Electrowinning Cells

		Reference
Actual Operation	6,260 hr/yr	*J. Balas, CR Briggs, email 2/9/2012*
Hg Emissions	7.40E-05 lb/hr	*Most recent stack test for Florida Canyon's EW cells from NDEP's MEMS database*

Because there is no stack test data for CR Briggs, actual mercury emissions are estimated using test data from Florida Canyon, which is a similar-sized gold mine with test data from mercury units without carbon controls.

Actual Mercury Emissions:

$$\frac{7.40E\text{-}05\ \text{lb Hg}}{\text{hr}} \times \frac{6{,}260\ \text{hr}}{\text{yr}} \times \frac{\text{ton}}{2000\ \text{lb}} = \frac{2.3E\text{-}04\ \text{ton Hg}}{\text{yr}} \quad \frac{0.463\ \text{lb Hg}}{\text{yr}}$$

Retort Furnace

		Reference
Actual Operation	624 hr/yr	*J. Balas, CR Briggs, email 2/9/2012*
Hg Emissions	4.86E-06 lb/hr	*CR Briggs 7/21/2010 M101A stack test*

Because there is no stack test data for CR Briggs, actual mercury emissions are estimated using test data from Florida Canyon, which is a similar-sized gold mine with test data from mercury units without carbon controls.

Actual Mercury Emissions:

$$\frac{4.86E\text{-}06\ \text{lb Hg}}{\text{hr}} \times \frac{624\ \text{hr}}{\text{yr}} \times \frac{\text{ton}}{2000\ \text{lb}} = \frac{1.5E\text{-}06\ \text{ton Hg}}{\text{yr}} \quad \frac{0.003\ \text{lb Hg}}{\text{yr}}$$

Dore Refinery Furnace

		Reference
Actual Operation	271 hr/yr	*J. Balas, CR Briggs, email 1/26/2012*
Hg Emissions	2.70E-04 lb/hr	*Most recent stack test for Florida Canyon's furnace from NDEP's MEMS database*

Because there is no stack test data for CR Briggs, actual mercury emissions are estimated using test data from Florida Canyon, which is a similar-sized gold mine with test data from mercury units without carbon controls.

Actual Mercury Emissions:

$$\frac{2.70E\text{-}04\ \text{lb Hg}}{\text{hr}} \times \frac{271\ \text{hr}}{\text{yr}} \times \frac{\text{ton}}{2000\ \text{lb}} = \frac{3.7E\text{-}05\ \text{ton Hg}}{\text{yr}} \quad \frac{0.073\ \text{lb Hg}}{\text{yr}}$$

Carbon Processes with Mercury Retort (Carbon Kiln, Electrowinning Cells, Retort Furnace, and Dore Refinery Furnace)

Potential Mercury Emissions:

$$\frac{2.2\ \text{lb Hg}}{\text{ton concentrate}} \times \frac{34{,}286\ \text{lb conc.}}{\text{yr}} \times \frac{\text{ton}}{2000\ \text{lb}} = \frac{37.7\ \text{lb Hg}}{\text{yr}}$$

Air Sciences Inc.	PROJECT TITLE: CR Briggs	BY: A. Loyd		
AIR SCIENCES INC.	PROJECT NO: 85-11-1	PAGE: 1	OF: 1	SHEET: Summary
ENGINEERING CALCULATIONS	SUBJECT: MACT EEEEEEE Sources	DATE: February 15, 2012		

Actual Emissions

Source	PM tpy	PM_{10} tpy	NO_x tpy	SO_2 tpy	CO tpy	VOC tpy	CO_2e tpy	Mercury lb/year
Carbon Kiln	0.06	0.06	-	-	0.002	-	-	8.29
Electrowinning Cells	-	-	-	-	-	-	-	0.46
Retort Furnace	-	-	-	-	-	-	-	0.003
Dore Refinery Furnace	0.34	0.34	0.02	0	0.01	0.001	22.08	0.07
Total	0.40	0.40	0.02	0.00	0.02	0.00	22.08	8.82

Potential Emissions

Source	PM tpy	PM_{10} tpy	NO_x tpy	SO_2 tpy	CO tpy	VOC tpy	CO_2e tpy	Mercury lb/year
Carbon Kiln	1.05	1.05	-	-	0.002	-	-	
Electrowinning Cells	-	-	-	-	-	-	-	
Retort Furnace	-	-	-	-	-	-	-	
Dore Refinery Furnace	11.08	11.08	0.75	0	0.43	0.05	715.05	
Total	12.13	12.13	0.75	0.00	0.43	0.05	715.05	37.71


north
north west
north east
95
Las Vegas
Ballarat, CA
west
CR Briggs Mine
East
south west
south east
15
south
Barstow-Bakersfield Hwy
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